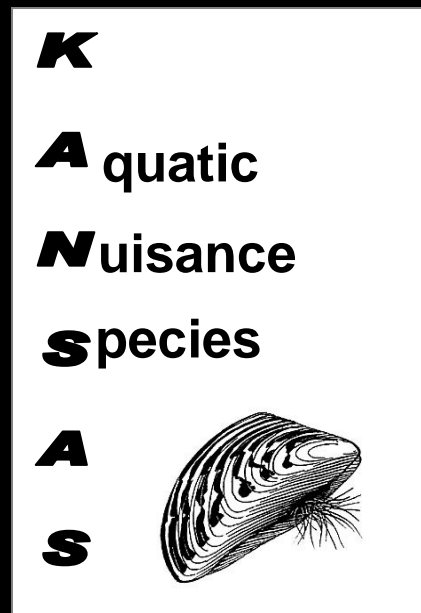


# Don't move a mussel: *meeting the invasive species challenge*



Jason M. Goeckler  
Montana Invasive Species Summit  
February 17, 2012





# MT SUNFLOWER

1069

HIGHEST  
POINT IN  
KANSAS

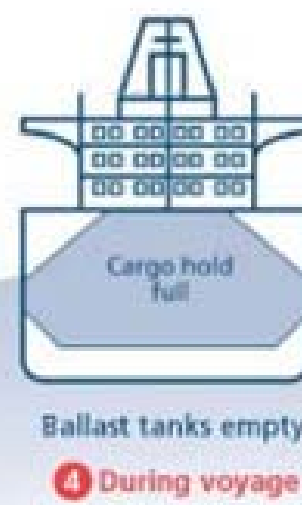


# Invasive Species Facts

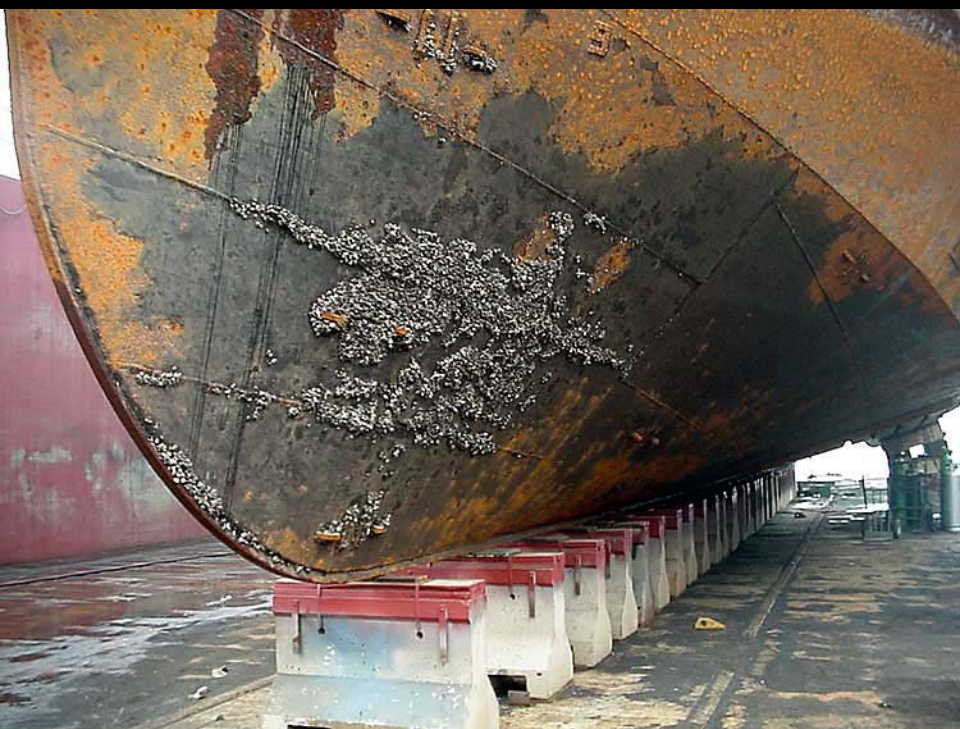
- Since Columbus' arrival 50,000 species have been introduced into North America.
- Impact nearly half of the species currently listed as Threatened or Endangered under the U.S. Federal Endangered Species Act.
- Globally, damages cost \$1.4 trillion annually.
  - US-\$123 billion/yr in economic loss.

# How do they get here?

- Many vectors for spread but most are human caused both intentional and unintentional.
  - Illegal release of exotic species
  - Establishment of sport fisheries
  - Aquaculture
  - Commercial hauling of watercraft
  - Bait trade
  - Live food shipments
  - Pet store trade
  - Routine activities dealing with water
  - Contaminated loads in commercial vessels
- Commercial ships are responsible for 80% of introductions via ballast water and vessel fouling

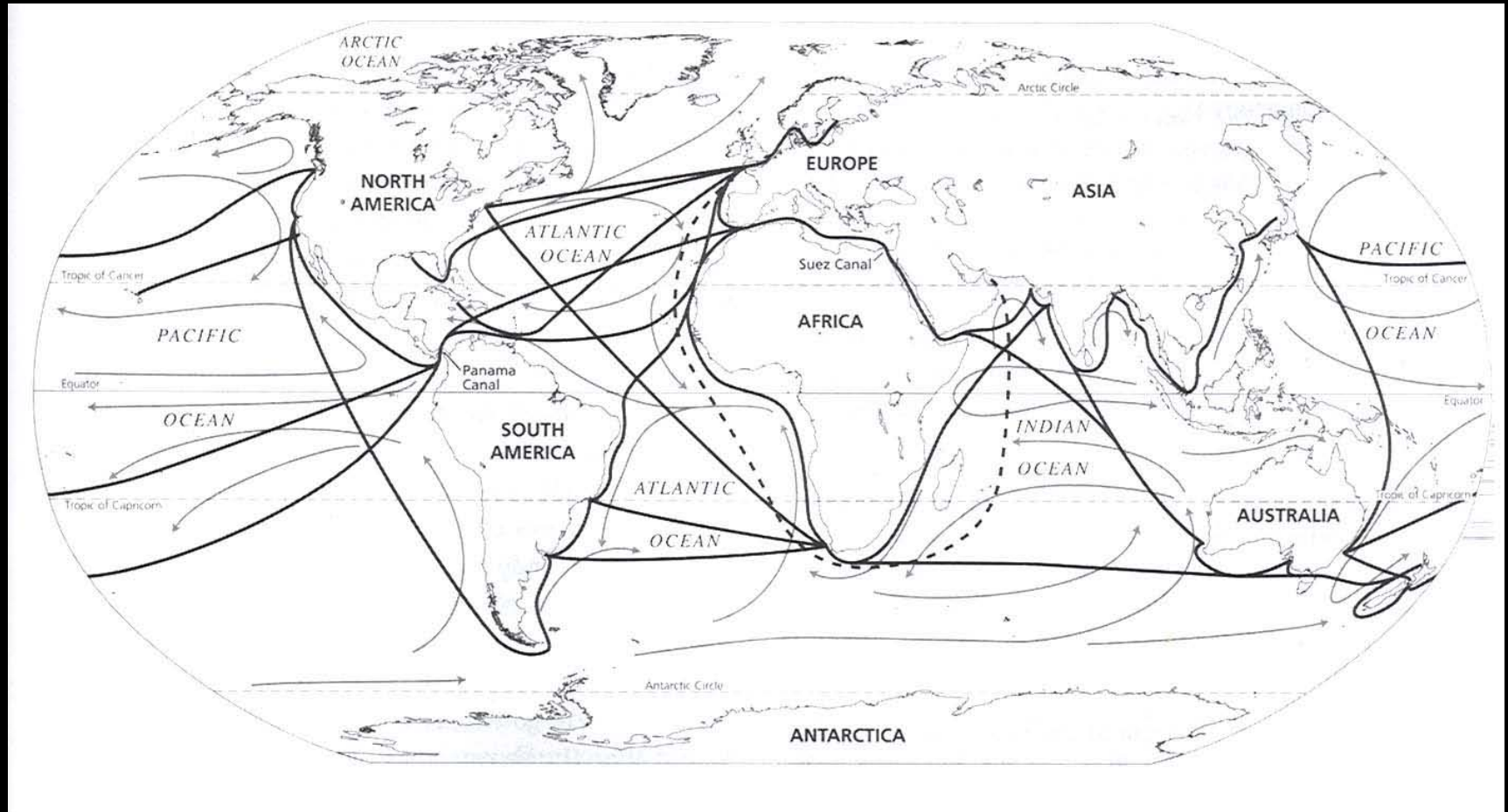






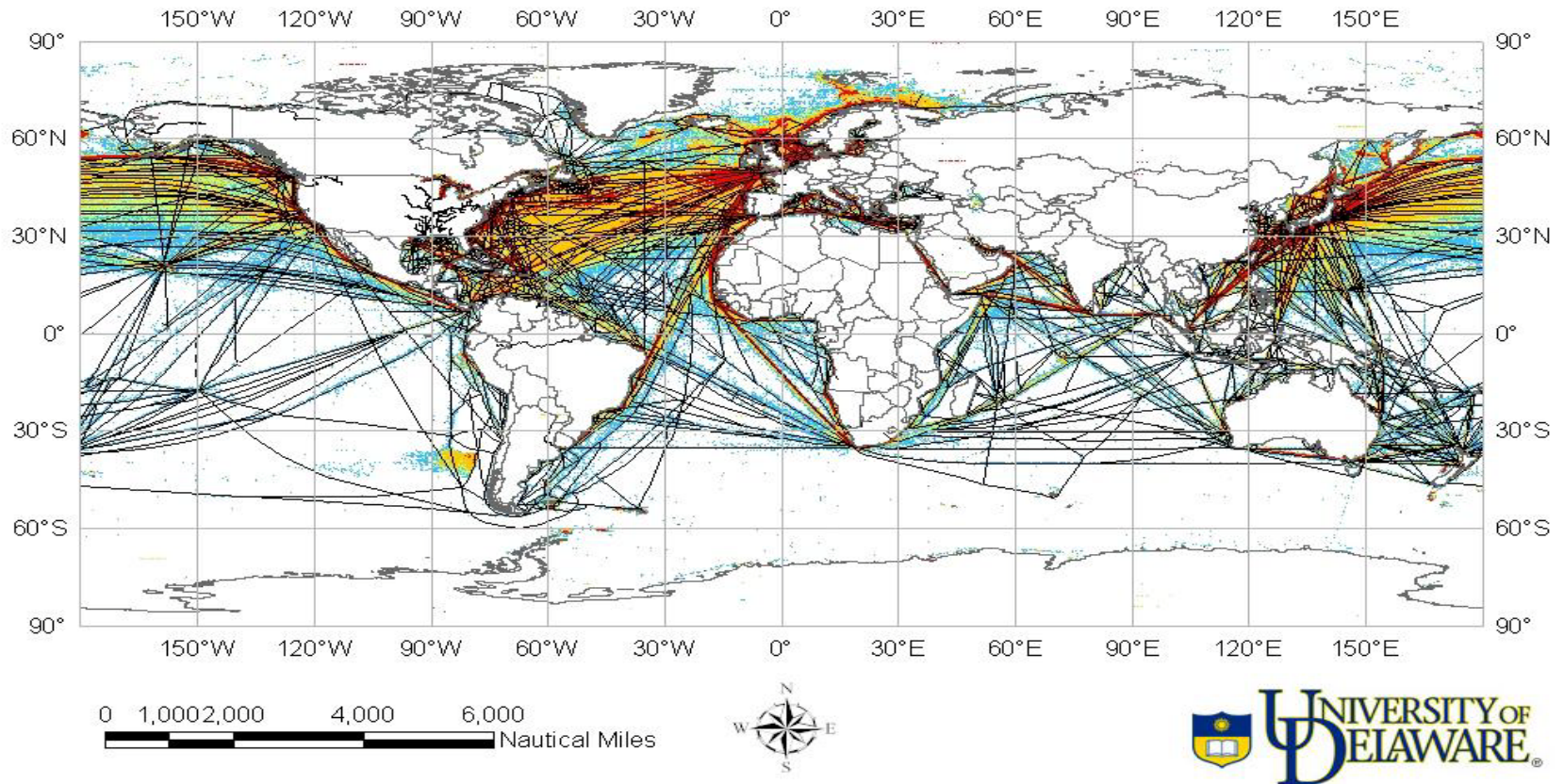


# A Challenge is that Global Shipping has Expanded from this .....



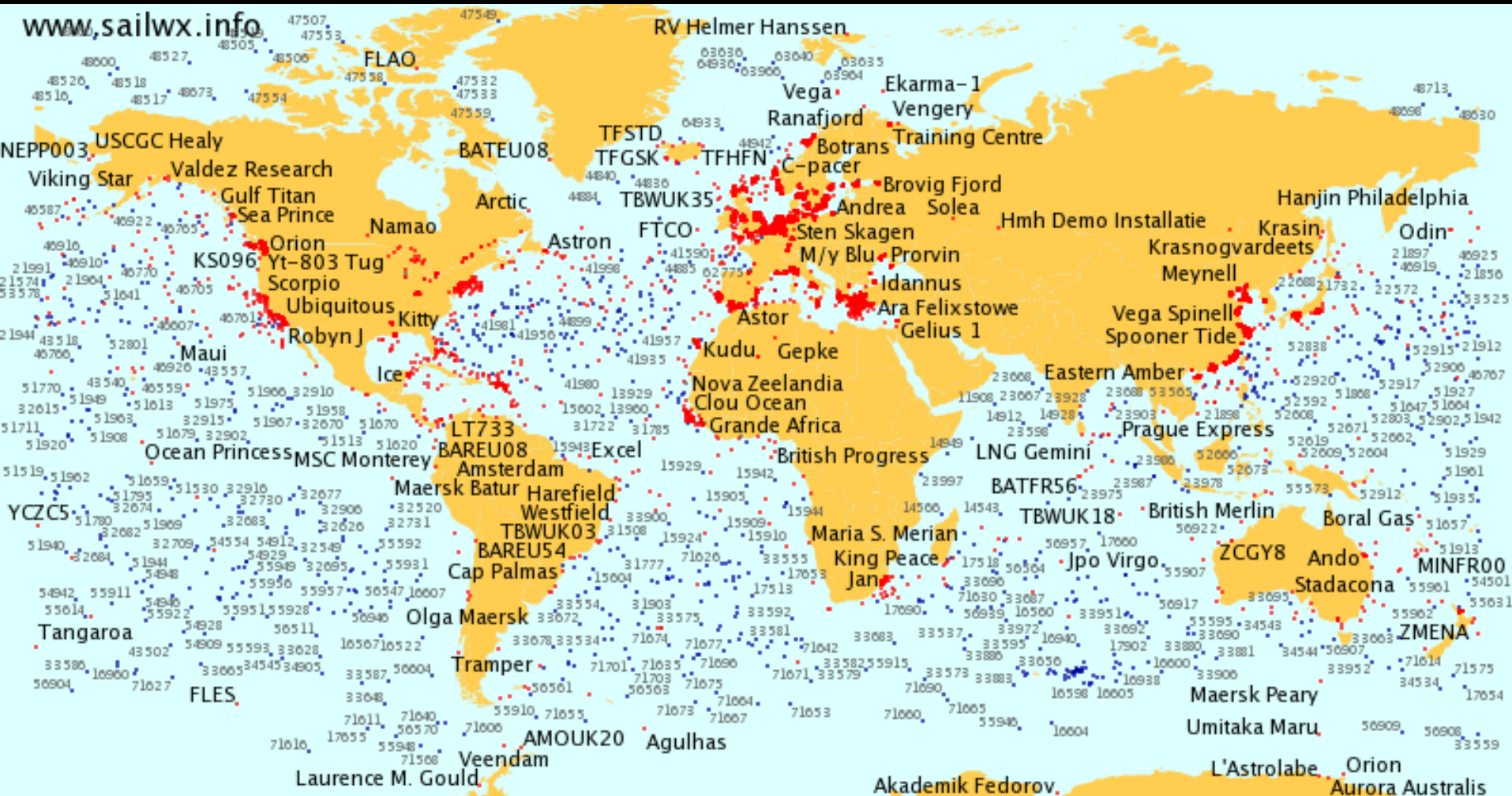
Main Ocean Steam Routes, 1850s to 1950s

To this ....



World Waterways Network

# January 16, 2012



*World container ship traffic has doubled since 1997*

*About 5,000 to 7,000 species  
are in motion around the world  
this morning in the ballast water of  
ocean-going ships*



# We all live downstream...



If I would go West, I would go to Kansas

-Abraham Lincoln

# Global issue/national issue

- Expect national leadership
  - there has been some attention



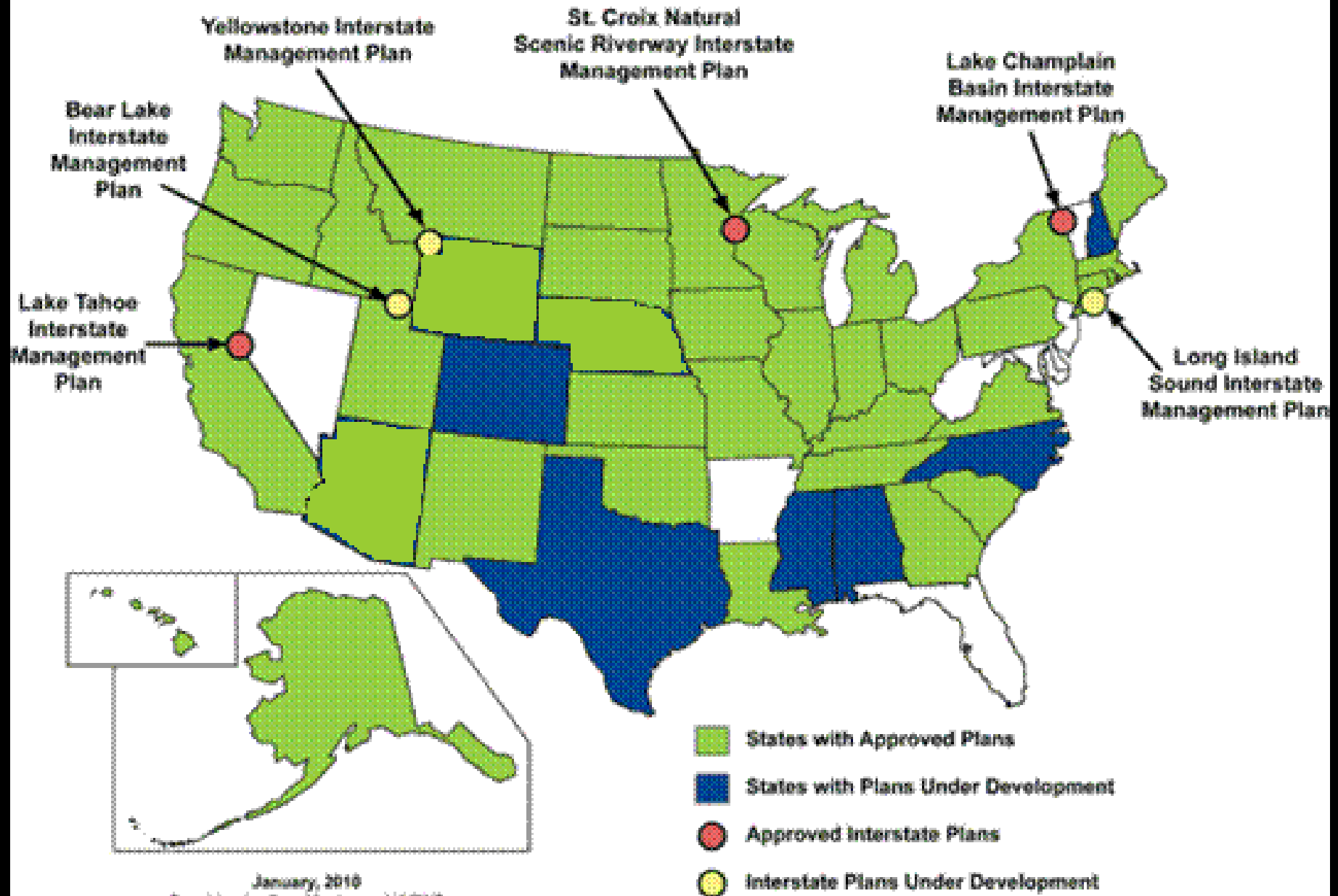


# Federal Legislation

- 1990 Nonindigenous Aquatic Nuisance Prevention & Control Act
  - Established national goal to limit spread of ANS
- 1996 National Invasive Species Act
  - Opportunity for federal cost-share support
- 2010 Carp Act
  - Effort to prevent spread of Asian carp
- Injurious Species List (Lacey Act)
  - prohibits the possession and transport of certain invasive species

# Status of State ANS Management Plans

(36 Approved Plans - 33 State, and 3 Interstate)



# Priority Species



027



# ANS Management Goals

- Coordinate ANS management activities
- Prevent introduction of ANS
- Detect, monitor, and eradicate ANS
- Control or eradicate established ANS
- Educate all aquatic users
- Support research and disseminate information





20

ALERT

September 2009

Helping you stay *Connected.*

From Western Energy's Green Team



"take

GET INFORMATION  
TAKE

at D



100% Post-consumer Content

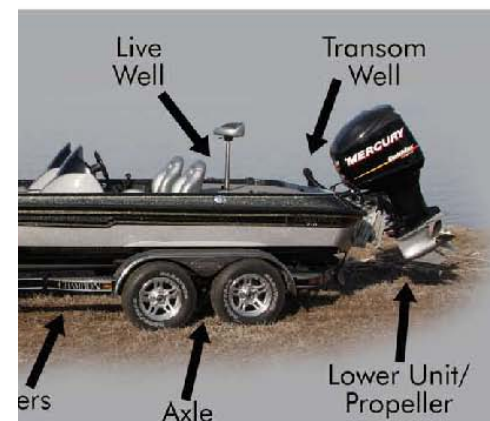
To inquire about the benefits of CFLs or heat pumps, or for more information about Westar Energy's energy efficiency efforts, call us at 1.888.WORKS.50 or email us at EfficiencyWorks@WestarEnergy.com.



For more information visit [www.kdwp.state.ks.us](http://www.kdwp.state.ks.us)

# Help **STOP** the Mussel

visible mud, plants, fish or  
before transporting equipment  
water from equipment  
and dry all equipment  
live bait in approved receptacle  
Zebra Mussels, dry equipment  
days or wash equipment with  
ree water



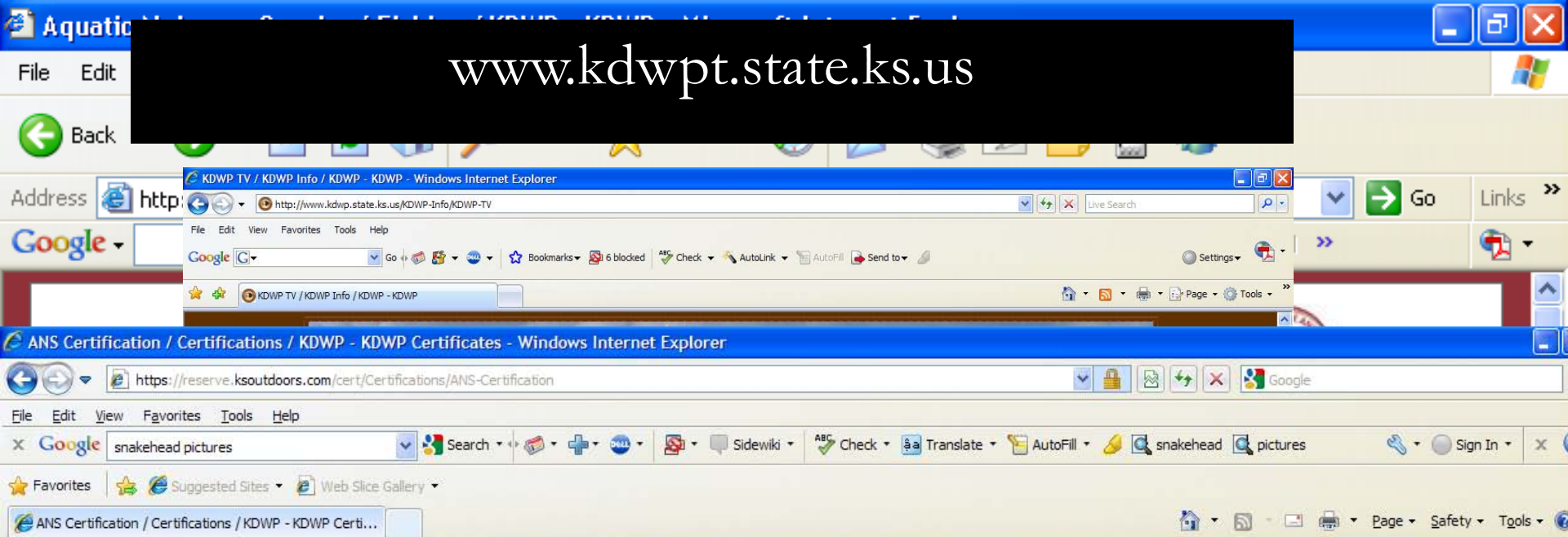
**General and State Law Prohibit  
Transport of Zebra Mussels**

**STOP AQUATIC  
HITCHHIKERS!**

[www.ProtectYourWaters.net](http://www.ProtectYourWaters.net)



www.kdwpt.state.ks.us



## ANS Certification

### Preventing the spread of Aquatic Nuisance Species

[Start Certification](#)

A voluntary program of certification



**STOP AQUATIC  
HITCHHIKERS!**

*Please remember:*

**CLEAN • DRAIN • DRY**

**Boats and Equipment**

[www.kdwp.state.ks.us](http://www.kdwp.state.ks.us)





# Why are ANS still spreading?

- We now have 15 (+2) zebra mussel lakes
  - And contaminated boats are still moving
- Asian carp in the rivers, white perch being transported
  - Yet limited action to address their spread through bait movement
- Eurasian watermilfoil to new lakes
  - Not listed as a state noxious weed
- Various diseases found in the wild
  - No disease certification required
- Alligator released at Coffey County Lake or annual Pacu
  - Limited oversight of aquatic pets
- Limited control of major ANS vectors:
  - Boats, bait, use/discharge of raw water, movement of contaminated equipment, fish movement and release, ballast, aquatic imports, disease issues, pet releases...

**Don't move a mussel:**  
*meeting the invasive species challenge*

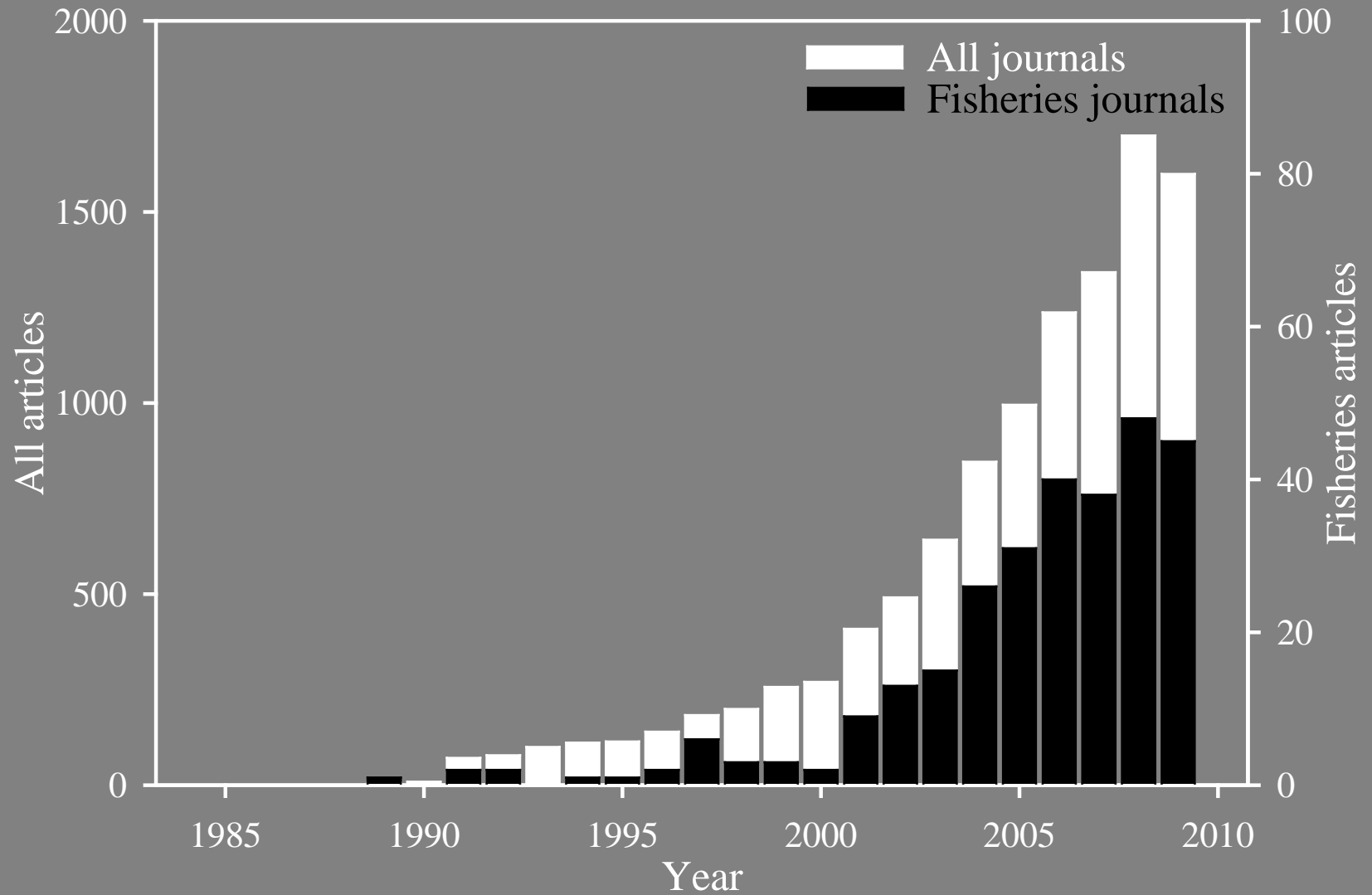


Dollars and Change

# Dollars

- Money is a scarce resource
  - Without money we can't find solutions
  - Other national initiatives have the ear of legislators
    - Health care, social programs, defense, disasters, etc.
  - The conversation needs to be economic in order to be valid
- No real solution to the problem as the science is developing
  - Once infested control difficult and costly
  - Endless number of threats
  - Seemingly endless number of vectors
  - Prevention is key, yet unwillingness to make sacrifices in the way we 'do business'
  - Difficult to measure successes
- Unless decision makers understand the issue, money will remain scarce

# Invasive species



# Dollars

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# Dollars continued...

- Quagga mussels made it to Lake Mead
  - People began to complain about them
  - Regional concern about spread









# Quagga-Zebra Mussel Action Plan for Western U.S. Waters

Submitted to the  
Aquatic Nuisance Species Task Force  
October 2009

by the  
Western Regional Panel  
on Aquatic Nuisance Species

The Western Regional Panel  
On Aquatic Nuisance Species



Zebra mussels (*Dreissena polymorpha*)



Quagga mussels (*Dreissena bugensis*)

2010: \$1,200,000



# Great Lakes Restoration Initiative

2010-2014

\$70,000,000



# Change

- No one likes change
  - We've always done it this way
  - That's a lot more work
  - The spread is inevitable
  - What about that guy?
  - I was in 'X' and they did it this way

# Change is necessary





# Change is necessary

dress.

2. Record expected length of time for paper presentation (no more than 20 minutes including discussion).
3. Prepare and submit a brief abstract of about 150-200 words.
4. Submit 1, 2, and 3 above to the Program Chairman as soon as possible.

It is expected that contributors or their designates will attend the meeting and present their papers. Audio-visual requirements should be made known to the undersigned.

R. A. Ryder  
Program Chairman  
AFS - Detroit 1976  
Box 2089  
Thunder Bay, Ontario P7B 5E7

**THE AFS EXECUTIVE COMMITTEE (BOARD OF DIRECTORS)** is composed of 14 voting members and is authorized to transact business and decide policy between annual meetings. The Society's present Executive Committee is as follows:

Fish & Game Department  
Helena, Montana 59601

Dr. Henry A. Regier (2nd V. Pres.)  
Institute for Environmental Studies  
University of Toronto  
Toronto, Ontario, Canada M5S 1A4

Dr. Reece M. Bailey (Immediate Past Pres.)  
University of Michigan  
Museum of Zoology  
Ann Arbor, MI 48104

Dr. John Gottschalk (Chairman, Finance Comm.)  
I.A.G.F.C.C.  
1412 16th Street, N.W.  
Washington, D. C. 20036

Mr. Ronald Goede (Pres. Western Div., AFS)  
Fisheries Experimental Station  
Rt. 1, Box 254  
Logan, Utah 84321

Dr. William S. Platts (Past Pres. Western Div.)  
1603 Sunrise Rim  
Boise, ID 83705

This photo doesn't have any direct relevance to *Fisheries*, but your editor thought the membership might like to share the view.



# Change continued...

- We are trying to change behavior
  - Regulations
  - Education

# Asian carp



# Asian Carp









# Concerns



# Concerns



# Can more be done?

- Is our outreach sufficient?
- Are our regulations adequate?



# Regulation Considerations

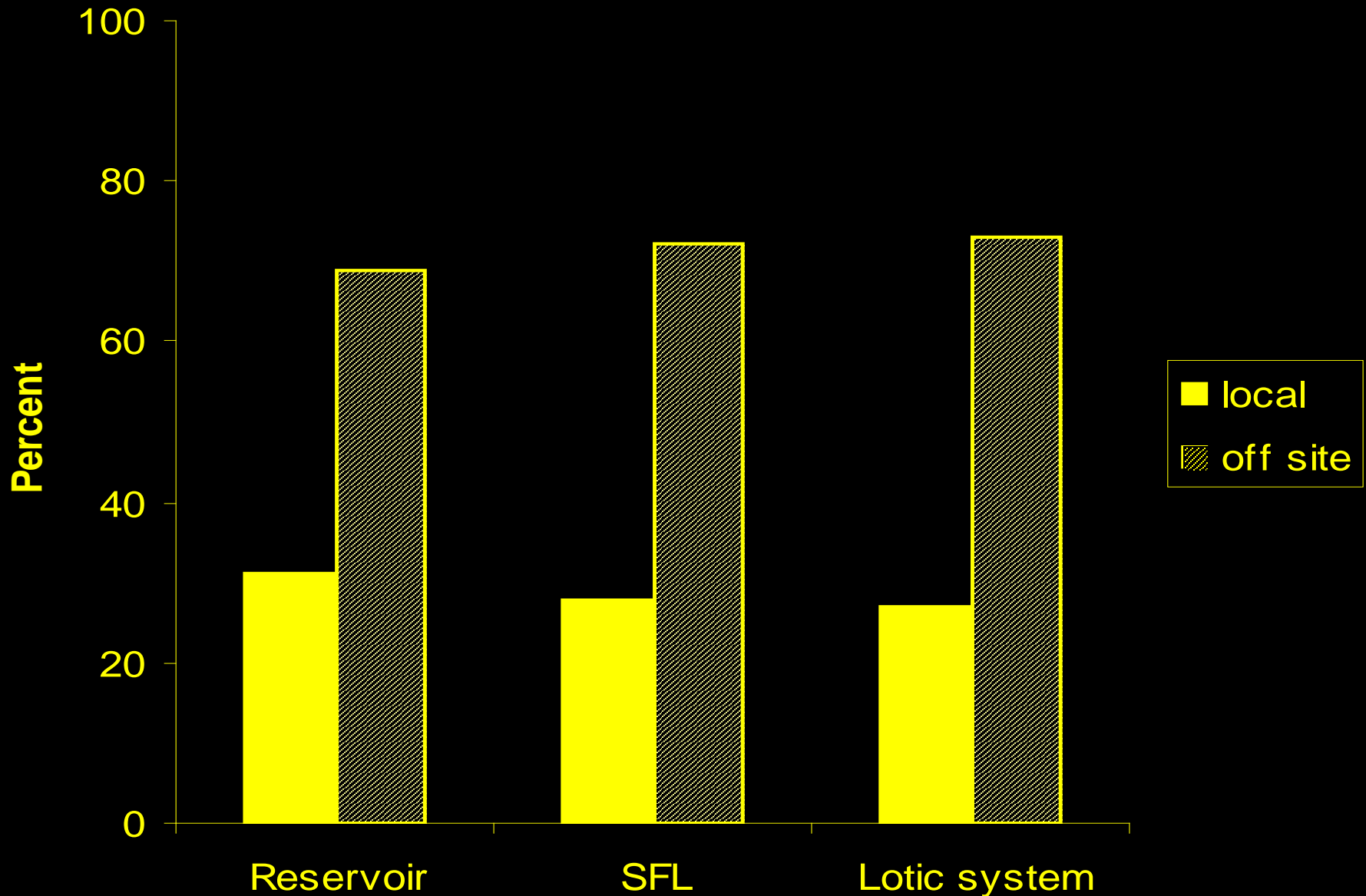
- Movement of wild-caught bait to new waters



## K.A.R. 115-8-6

Fishing minnows and other fishing bait may be taken for use as fishing bait only on a noncommercial basis and may be used only in the department-managed water where taken.

# Where do you collect your baitfish?



# Regulation Considerations

- Movement of wild caught bait to new waters
- Release of baitfish into the water



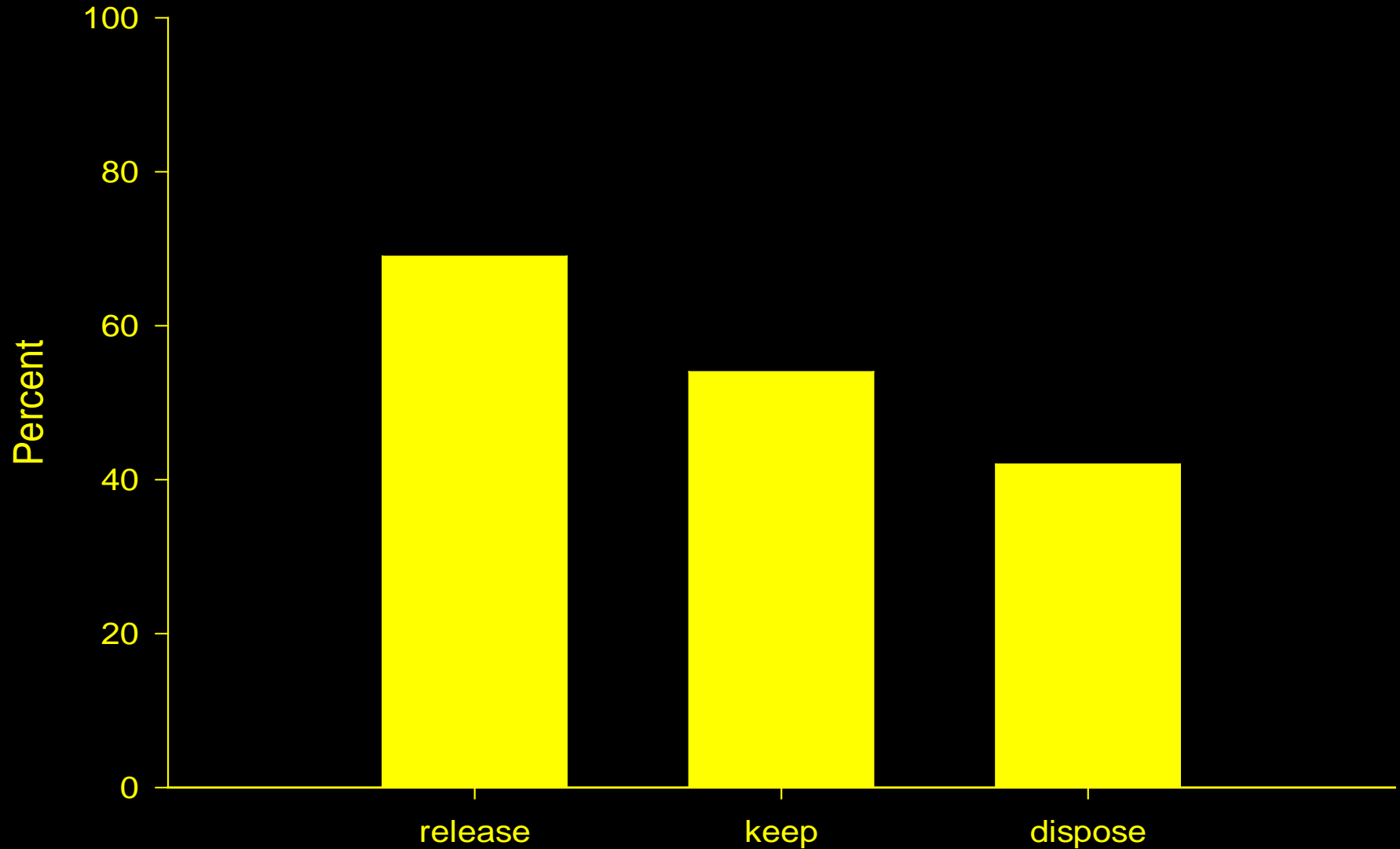
# K.A.R. 115-8-12

Wildlife may be released on department lands or waters only as authorized by:

- written agreement
- permit
- department-approved management plan
- rules and regulations
- posted notice

# Destination of unused bait

n=635



# Change continued...

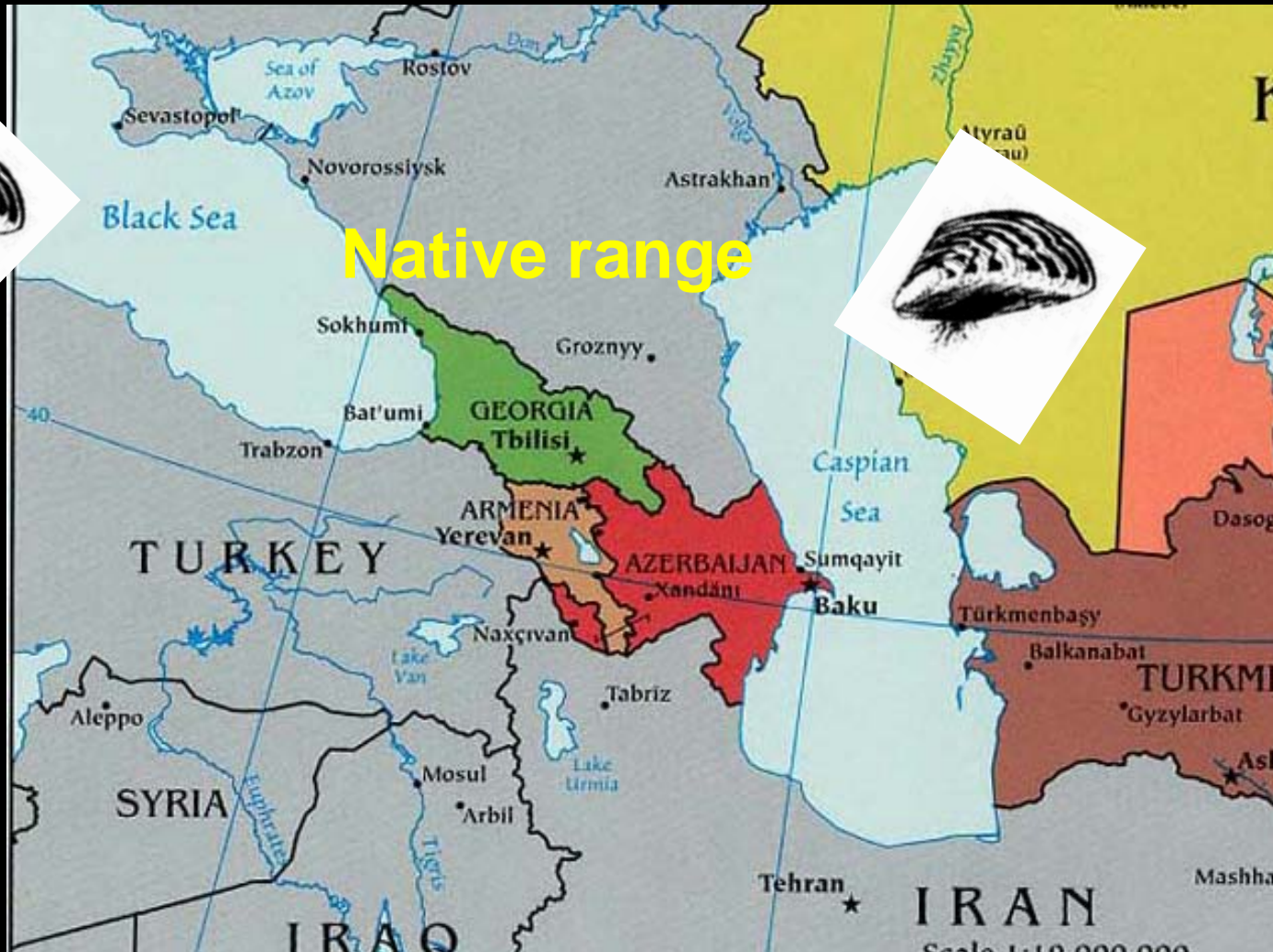
- We are trying to change behavior
  - Regulations:
    - Enforceable, understandable
  - Education:
    - Uniformity in communication-coordination
    - Targeted
    - Action oriented
- Must be directly relevant for true change



# Zebra mussel



Zebra mussels are native to the Black and Caspian Sea in Europe.



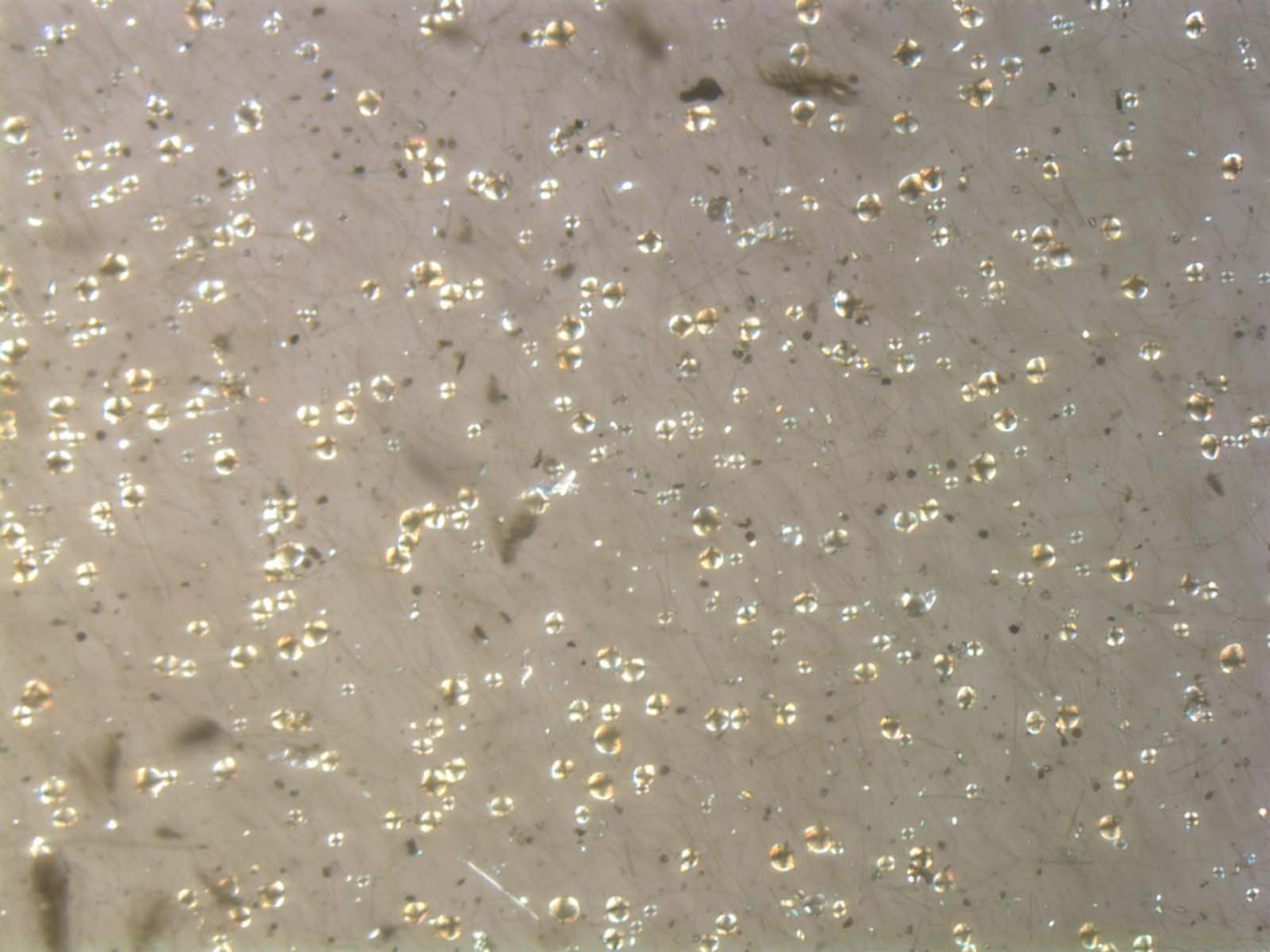
Arrived into the Great Lakes in 1988 in the ballast water of ships.







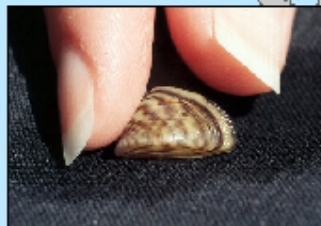
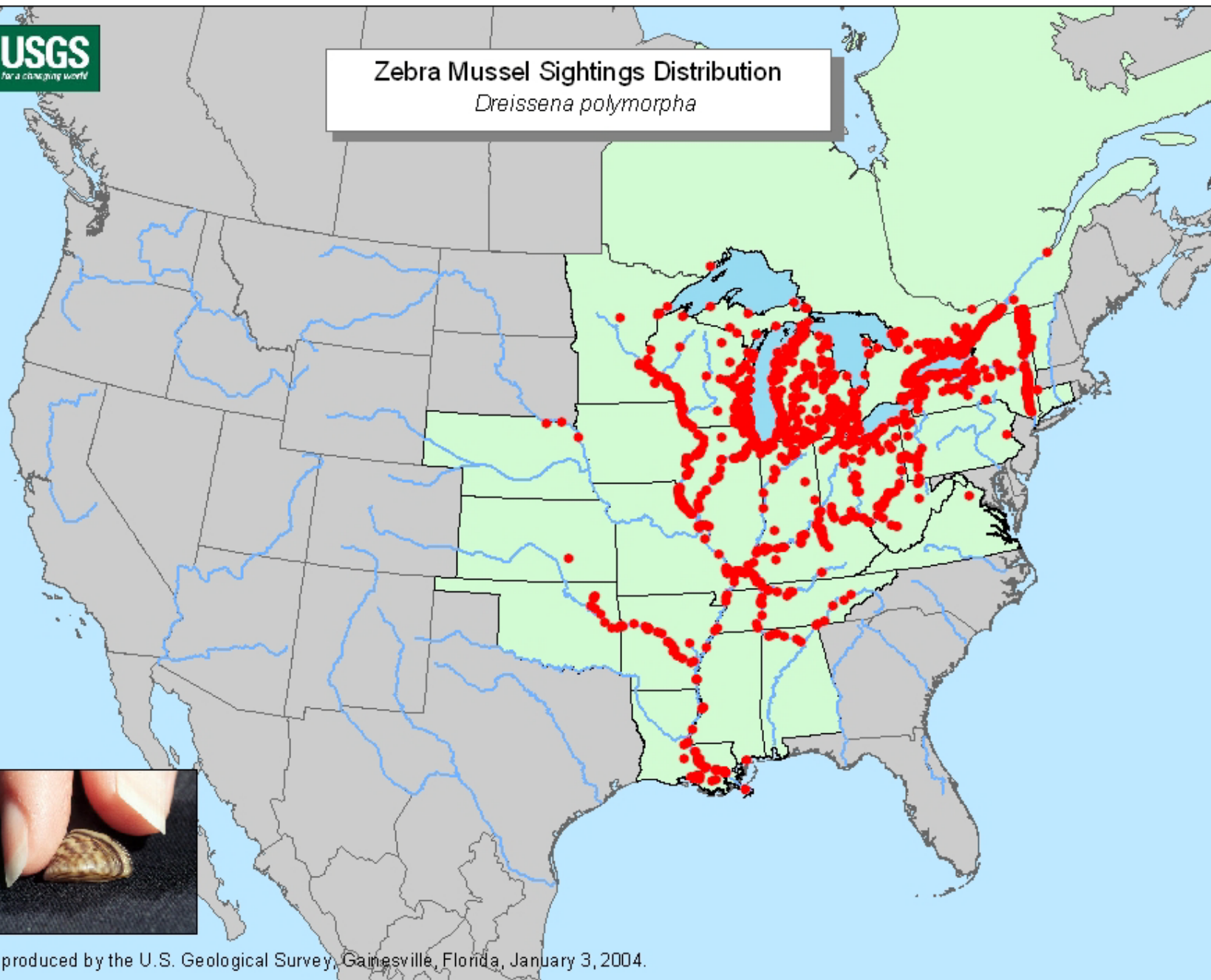






## Zebra Mussel Sightings Distribution

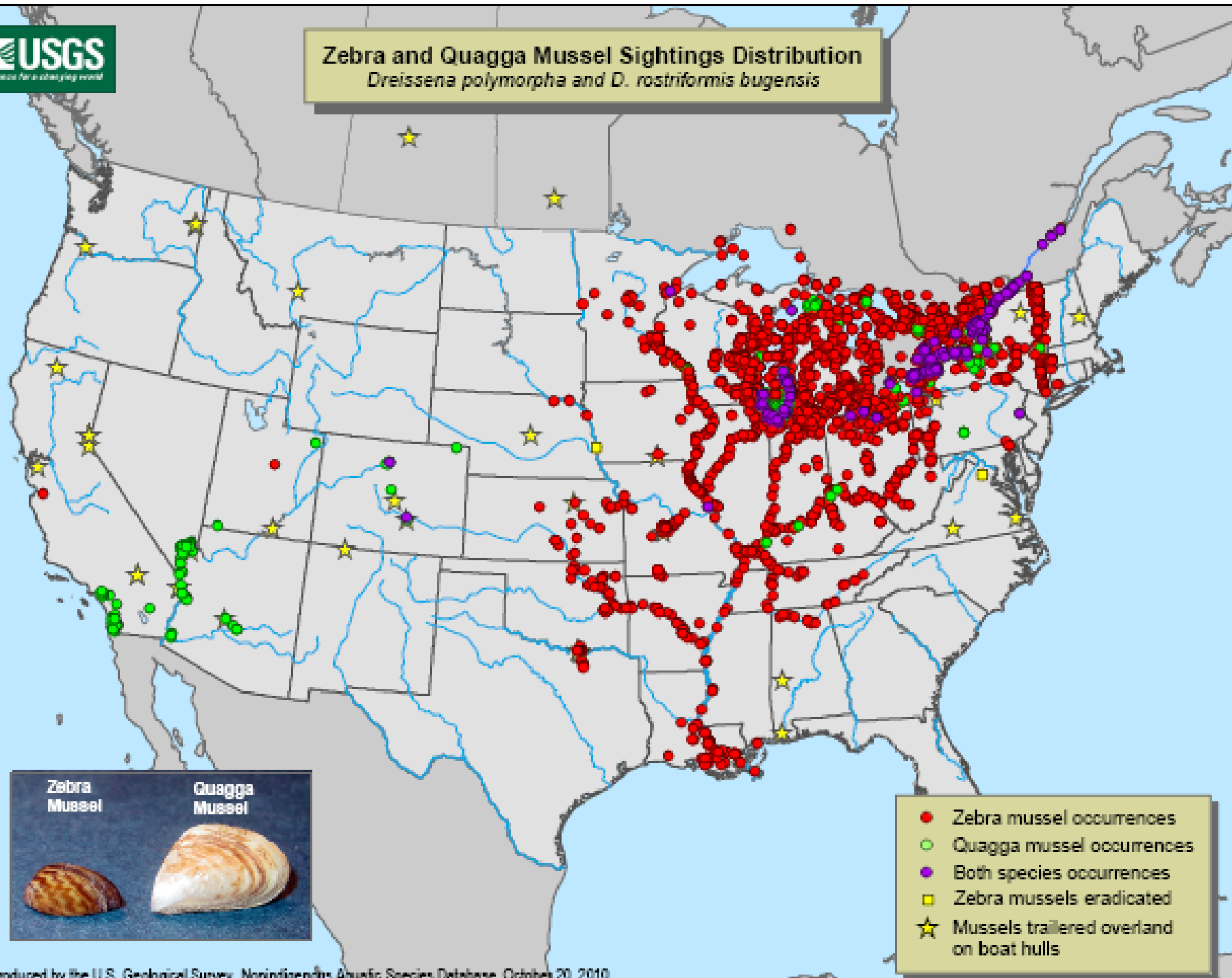
*Dreissena polymorpha*



Map produced by the U.S. Geological Survey, Gainesville, Florida, January 3, 2004.



# Zebra and Quagga Mussel Sightings Distribution *Dreissena polymorpha* and *D. rostriformis bugensis*



# Why are we concerned?









Because ANS impact you...



*“It’s just a fisheries issue”*

# Do you fish?



# Fisheries Impacts

## Competition

- Filter feeders- up to a liter a
- Reductions in density and biomass of the zooplankton community may result in reduced growth or abundance of age-0 fish

## Water quality/habitat

- Increase in algal blooms
- Habitat/spawning area degradation

## Recreation

- Sharp shells cut fishing line



Photo Credit: Marc Murrell



# Are you a birder?

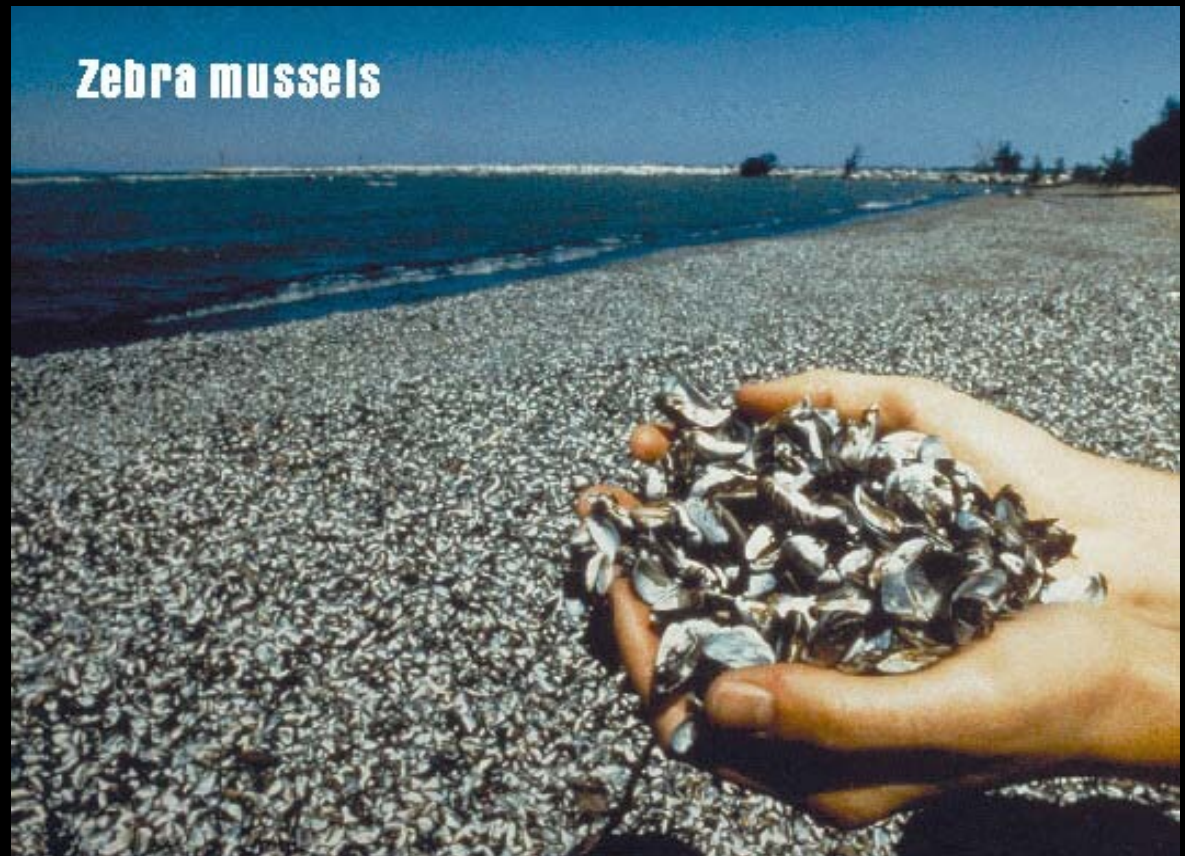
## Do you hunt waterfowl?

- Bioaccumulation of toxins
  - Selenium, avian botulism
- Bird population decline
  - (8,000+/yr.)



# Do you like the beach?

- Sharp shells will cut unprotected skin
- Disturbing odor
- Increase in toxic algae blooms



Do you irrigate crops or water  
livestock?





# Do you live in the floodplain?





Do you use electricity?  
Do you drink water?



Do you have property to protect?





# Do you appreciate things in a natural state?



UNITED NATIONS  
International Year of Biodiversity

Invasive species are the main direct driver of biodiversity loss-ICB







# Do you like to keep money in your wallet?

- Nationwide expenditures-\$1 billion/yr.
  - Power generation-\$145 million/yr.
  - El Dorado~\$1.5 million set-up,
  - ~\$383,000/yr. increase
  - Wichita ~\$2.2 million set-up



# **Don't move a mussel:** *meeting the invasive species challenge*

- Dollars
  - Money to accomplish plan goals
- Change
  - Natural resource community can facilitate change
  - Make ANS a priority in the work you do
  - Look for areas to include ANS message
  - Make policies that support ANS prevention
  - Work with partners to assure coordinated response
  - Be a responsible steward of our water resources

# 2012 Invasive Species Summit:

## *Comprehensive AIS Management in 2012 and Beyond*





In wasting our resources, we are wronging  
our descendants.

– Theodore Roosevelt